Agilent GPIB, USB and Instrument Control Products

for easy PC-to-instrument connection

IO
ADAPTER
USB
LAN
CONNECTIVITY
PCI
PCIe
RS-232
GPIB

- Choose the best way to connect your PC to GPIB, USB and RS-232 instruments

- Take advantage of PC-standard interfaces (USB, LAN, PCI, PCIe)

- Protect your investment with industry-standard I/O software

Anticipate ___*Accelerate* ___*Achieve*

Agilent Technologies

Introducing Agilent GPIB, USB and Instrument Control Products

Agilent instrument control hardware family benefits

- Easy connection to GPIB, USB and RS-232 instruments — Agilent instrument control hardware offer simple "plug-and-go" set up and configuration.

- Use PC-standard interfaces — Connect via your computer PCI/PCIe® slot or use the built-in USB or LAN ports on your PC to connect to your instruments.

- Choice of interfaces (GPIB, RS-232, USB, LAN, PCI, PCIe® — Agilent offers you a selection of products to meet your I/O needs. We work where you do!

- Use industry-standard I/O libraries — The included industry-standard VISA I/O libraries make it easy for you to use your existing software programs and let you mix and match test instruments and software from different vendors in a single system.

Connecting is as easy as 1-2-3

1 **Install** Agilent IO Libraries Suite software on your PC

2 **Hook up** up the instrument control hardware (USB, LAN, RS-232 or GPIB cables) between your instruments and your PC

3 **Detect instruments** and devices, then configure interfaces with Connection Expert

Easily mix instruments from different vendors

Agilent IO Libraries Suite eliminates the headaches associated with trying to combine hardware and software from different vendors. The software is compatible with GPIB, USB, LAN and RS-232 test instruments that adhere to the supported interface standards, no matter who makes them.

When you install the IO Libraries Suite, the software checks for the presence of other I/O software on your computer. If it finds another vendor's VISA libraries (such as National Instruments), it automatically installs in a side-by-side mode that allows you to use your existing I/O software and the Agilent software together in multi-vendor systems without you being concerned with the behind-the-scenes details.

Works with millions of existing instruments from hundreds of vendors

Use the most trusted and reliable technology for your connections. The IO Libraries Suite ships with more than 150 instruments from Agilent Technologies. It works with literally millions of existing instruments—helping you minimize the number of software packages you need. You won't have to switch between packages as you use a mix of existing and new instruments in the future.

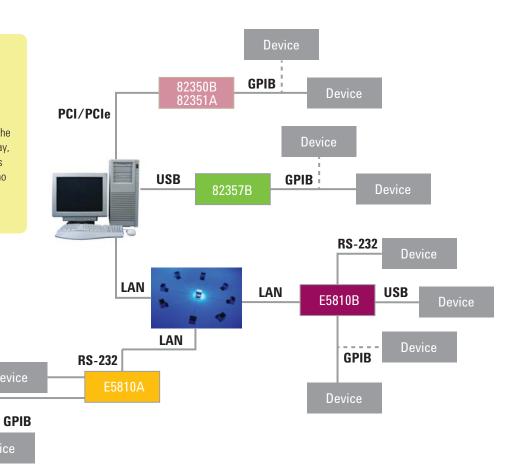### Work in the environment comfortable to you

In addition, the IO Libraries are compatible with a variety of application development environments and programming APIs including Agilent or NI VISA, VISA COM, SICL, and Agilent 488 (compatible with NI-488.2), giving you even more flexibility to choose the software and hardware from any vendor to get your job done.

Select the right connectivity for your need

	Model	Description	Recommended Use	Page
GPIB Boards	**82350B**	PCI High-Performance GPIB Interface Card	• Maximum GPIB throughput for all configurations • Adding GPIB connection for PCI-based PCs or workstations	4
	82351A	PCIe-GPIB Interface Card	• Bandwidth-intense test applications • Adding GPIB connection for PCIe-based PCs or workstations	6
USB Converters	**82357B**	USB/GPIB Interface	• Easiest GPIB connectivity • Notebook computer GPIB connections	8
LAN Converters	**E5810B**	LAN/GPIB/USB Gateway	• One-box connectivity – remote GPIB, RS-232 and USB connections • Sharing of instruments in a distributed system	10
	E5810A	LAN/GPIB	• Connection to remote GPIB and RS-232 instrumentation • LAN distributed systems	12
Cables and Adapter	**10833x**	GPIB Cables	• 10833A — 1 m • 10833C — 4 m • 10833F — 6 m • 10833B — 2 m • 10833D — 0.5 m • 10833G — 8 m	14
	10834A	GPIB-to-GPIB Adapter	• Extends the first cable 2.3 cm away from the rear panel to • provide clearance for other connectors, switches, and cables.	14

System Topology

Agilent instrument control helps connect your instruments to PC easily, reliably and affordably. From legendary GPIB cables to the the one-box connectivity gateway, see how each provides seamless integration of your instruments no matter where they are placed in your system.

Agilent 82350B PCI High-Performance GPIB Interface for Windows®

High performance for manufacturing test applications

The 82350B is Agilent's highest-performance GPIB interface. With a direct PCI computer connection, transaction overhead is minimized for the best overall performance.

The 82350B card de-couples GPIB transfers from PCI bus transfers. Buffering provides I/O and system performance that is superior to direct memory access (DMA). The hardware is software configurable and compatible with the plug-and-play standard for easy hardware installation. The GPIB interface card plugs into a 5 volt PCI slot in the backplane of your PC.

For programming capability you have access with the latest version of IO Libraries suite, to program in all standard development environments. Agilent's IO Libraries Suite is easy to use and works with virtually any vendor's instrument or T&M programming software application. It is also able to automatically configure to work with NI-488.2 and Agilent's or NI's VISA, VISA COM. Even if you use NI's IO software, Agilent IO Libraries Suite will configure automatically so you don't have to be concerned with compatibility issues.

Features

- PCI IEEE-488 interface for PCs
- Transfer rates up to 900 KB/s
- Dual-processor support
- Interface to 14 GPIB instruments (via daisy chain)

Recommended use

- Maximum GPIB throughput for all configurations

This traditional GPIB connection still offers the highest throughput

82350B technical specifications

General requirements	
Minimum system requirements	Windows XP / Vista / 7 / 8
Software requirements	Agilent IO Libraries Suite (included) Please see requirements on page 14
PCI bus slot	5-V PCI slot, 32 bits
Supported standards	PCI rev 2.2 IEEE 488.1 and IEEE 488.2-compatible
General characteristics	
Power	Backplane +5 V PCI
Connectors	Standard 24-pin IEEE-488 (GPIB) +5 V PCI
Maximum data rate	900 KB/s
Maximum instrument connection	14 instruments—daisy chain via GPIB
Buffering	Built-in
Configuration	Plug-and-play
EMC and safety *	IEC 61326-1 Group 1, Class A IEC 61010-1
Warranty	1 year
Dimensions	
Length, width, and height	122 mm (L) x 122 mm (W) x 22 mm (H) (a full-height PCI card)
Weight	0.091 kg
Environmental specifications	
Operating environment	0 °C to 55 °C
Operating humidity	Up to 90% at 40 °C non-condensing
Storage environment	−40 °C to +70 °C
Storage humidity	Up to 90% at 65 °C non-condensing
Recommended accessories	GPIB cables/adapter (refer to page 14)

Agilent 82351A PCI Express High-Performance GPIB Interface Card

High transfer rate for demanding test applications

The 82351A offers fast data transmission for various demanding test applications to ensure data is not lost or overwritten during transfers to memory.

PCIe (PCI Express) is an evolutionary version of PCI that offers a higher transfer rate across a low number of wires. It is also backward-compatible with PCI software, so you don't need to perform any code re-configuration. PCIe's powerful bus architecture allows bi-directional data transmission, and the implementation of a new class of test applications.

Features

- High transfer rate of 1.4 MB/s
- High flexibility via up-plugging (to x4 or x8 PCIe slots)
- 3.3 V signal level for lower power consumption
- Compatibility with industry standard PCIe® rev 1.0a and IEEE-488
- Interface to 14 GPIB instruments (max)

Recommended use

- Bandwidth-intensive test applications
- Adding GPIB connection to PCIe-based PCs or workstations

New standard for high-speed internal devices

82351A technical specifications

General requirements	
Minimum system requirements	Windows XP / Vista / 7 / 8
Software requirements	Agilent IO Libraries Suite (included) Please see requirements on page 14
PCI bus slot	3.3 V PCIe slot, 32 bits
Supported standards	PCIe rev. 1.0a IEEE 488.1 and IEEE 488.2-compatible

General characteristics		
Power	Backplane +3.3 V PCIe	
Connectors	Standard 24-pin IEEE-488 (GPIB) +5 V PCI	
Maximum data rate	1.4 MB/s	
Maximum instrument connection	14 instruments—daisy chain via GPIB	
Buffering	Built-in	
Configuration	Plug-and-play	
EMC and safety *	IEC 61010-1:2001 / EN61010-1:2001 Canada: CSA C22.2 No. 61010-1:2004 IEC61326-1:1997+A1:1998/EN61326-1:1997+A1	Pollution Degree 2 This product is rated for indoor use only.
Warranty	1 year	

Dimensions	
Length, width, and height	158.0 mm (W) x 120.8 mm (D) x 21.6 mm (H)
Weight	0.082 kg

Environmental specifications	
Operating environment	–5 °C to 60 °C
Operating humidity	Up to 90% at 40 °C non-condensing
Storage environment	–40 °C to 70 °C
Storage humidity	Up to 90% at 65 °C non-condensing

Recommended accessories	GPIB cables/adapter (refer to page 14)

Agilent 82357B USB/GPIB Interface

Connect GPIB instruments quickly and easily to your computer's USB port

The Agilent 82357B USB/GPIB interface provides a direct connection from the USB port on your desktop and laptop computers to GPIB instruments. Once the software is loaded, your computer automatically detects the 82357B when it is connected to the computer USB port.

With the 82357B USB/GPIB interface and its convenient plug-and-play feature, you just plug and go. It is also hot pluggable, making it easy to connect and disconnect without having to shut down the computer. No external power supplies are necessary.

The 82357B USB/GPIB interface implements USB 2.0 and is backward compatible with USB 1.1. The 82357B USB/GPIB interface uses a thin, flexible, high-quality USB cable that is USB 2.0-compliant. The USB cable is shielded, and the connector is specified to 1,500 insertions, ensuring a durable connection and reliable data transfer.

Features

- Fast and easy connection to GPIB instruments
- Uses standard USB and IEEE-488 interfaces
- Maximum GPIB transfer rate of up to 1.15 MB/s
- Use industry-standard software
- Parallel polling capability

Recommended use

- Easiest GPIB connectivity
- Notebook computer GPIB connections

Boosting performance with the simplest connectivity

82357B technical specifications

General requirements	
Minimum system requirements	Windows XP / Vista / 7 / 8
Software requirements	Agilent IO Libraries Suite (included) Please see requirements on page 14
Supported standards	USB 2.0 high speed Standard USB endpoints supported IEEE-488.1 and IEEE-488.2 compatible SICL and VISA 2.2
Unsupported GPIB modes of operation	Pass control Non-system controller mode
General characteristics	
Power	USB bus-powered device, +5 V, 500 mA (max), 200 mA (typ)
GPIB transfer rate	1.15 MB/s or better
Connectors	Standard 24-pin IEEE-488 (GPIB) Standard USB A
USB hubs	Self-powered hubs
Parallel polling	A single parallel poll can easily check up to eight individual devices at once, corresponding to the number of data lines on the GPIB
Cable	2.5-meter, shielded connector rated for 1500 insertions
LED indicators	READY, ACCESS, FAIL
Maximum connections	Maximum of 4 converters can be connected to the PC
Instrument connections	14 instruments—daisy chain via GPIB
Configuration	Plug-and-play
Warranty	1 year
EMC and Safety [1]	IEC 61010-1:2001/EN 61010-1:2001 Canada: CSA C22.2 No. 61010-1:2004 USA: UL 61010-1:2004
Dimensions	
Length, width, and height	105 mm (L) x 64 mm (W) x 30 mm (H) (includes connectors)
Weight	215 grams
Environmental specifications	
Operating environment	0 °C to 55 °C
Operating humidity	−40 °C to +70 °C
Storage environment	Up to 90% at 40 °C non-condensing
Storage humidity	Up to 90% at 65 °C non-condensing

[1] If you're using Agilent IO Libraries Suite 15.0 or higher, you're not required to install the driver separately as it would come built into the Suite.

Agilent E5810B LAN/GPIB/USB Gateway

One-box connectivity solution for easy GPIB, USB and RS-232 instrument control via standard LAN

The E5810B allows users to control various instrument interfaces remotely over wired or wireless LAN (with a wireless router). Now with USB capability, the E5810B connects up to 14 GPIB instruments, four USB instruments via a self-powered hub and an RS-232 instrument, giving test engineers a fast and efficient one-box solution. The E5810B is ideal for system integrators, automated testing and other applications requiring unlimited connection range and simultaneous connectivity to multiple instruments. It can be used during design verification, where the gateway makes it easy for engineers to share a rack of test equipment. For manufacturing, users can easily connect several test systems via a local LAN and control them with a single, centrally located PC; these systems can be accessed remotely for troubleshooting and debug.

Greater ease of use

The E5810B comes with an improved GPIB transfer rate of 1.2 MB/s and 1000BASE-T (1 Gigabit) LAN/Ethernet compatibility in addition to existing 100BASE-TX and 10BASE-T supportability.

With the built-in LCD display, users can quickly retrieve the IP address of the gateway and other system messages without needing to install additional software.

The E5810B also comes with LED indicators on the front panel display, allowing users to determine connection statuses of the gateway box at a glance.

Features

- Remote access and control of GPIB, USB and RS-232 instruments
- Faster GPIB transfer rate of up to 1.2 MB/s
- Supports 1000BASE-T (1 Gigabit)/100BASE-TX/10BASE-T LAN/Ethernet connection
- Power switch for hard reset
- Password-protected web interface for configuration
- LCD display for easy setup and use

Recommended use

- One-box connectivity – remote GPIB, RS-232 and USB connections
- Sharing of instruments in a distributed system

Security functions

- With the E5810B, a secure password is required to access and modify all web configuration pages. The gateway comes with the secure erase feature, which will erase the systems preset and data information securely.

Make LAN to GPIB, USB and RS-232 connections with greater ease

E5810B technical specifications

General requirements	
Minimum system requirements	Windows XP / Vista / 7 / 8
Supported Web browsers	Internet Explorer 6.0 or greater Internet Explorer 7.0 or higher is recommended for Windows Vista, Windows 7, Windows 8, Windows Server 2008 R2 and Windows Server 2012
Software requirements	Web browser Agilent IO Libraries Suite (included) Please see requirements on page 14
Supported standards	GPIB Standard IEEE 488.1, 488.2 USB 2.0 or lower (with the USBTMC-USB488 protocol) LAN/Ethernet: 10BASE-T/100BASE-TX/1000BASE-T networks RS-232 VXI-11 Protocol VISA 2.2 and Agilent SICL

General characteristics	
Power consumption	+12 VDC, 2 A Isolated ELV supply source
Connectors	Standard 24-pin IEEE-488 (GPIB), USB 2.0, RS-232 (9-pin), LAN RJ-45
Maximum data rates	1.2 MB/s for GPIB 115 Kb/s for RS-232 480 Mb/s for USB
Maximum instrument connection	14 GPIB instruments 1 USB connection (supports up to 4 USB instruments via self-powered hub) 1 RS-232 instrument Up to 16 simultaneous connectivity connections
LED indicators	Power, LAN, GPIB, USB, RS-232, FAULT
EMC and safety	IEC61326-1:2005 / EN61326-1:2006 Canada: ICES/NMB-001: Issue 4, June 2006 Australia / New Zealand: AS/NZS CISPR11:2004 IEC 61010-1:2010 / EN 61010-1:2010 (3rd Edition)
Warranty	1 year

Dimensions	
Length, width, and height	226.5 mm (8.92 in) × 238 mm (9.37 in) × 61 mm (2.36 in)
Weight	1.3 kg

Environmental specifications	
Operating environment	Operating temperature from 0 °C to 55 °C Relative humidity up to 95% RH at 40 °C Altitude up to 2000 m Pollution Degree 2 Installation Category II (through an AC/DC adapter)
Storage environment	Storage temperature from –40 °C to 70 °C Relative humidity up to 90% RH at 65 °C
Recommended accessories	GPIB cables/adapter (see page 14) Option 100 – Rack Mount Kit

Agilent E5810A LAN/GPIB

Remote access and collaboration with GPIB instruments via your LAN

The Agilent E5810A LAN/GPIB gateway provides a high-performance solution for remote access of GPIB and RS-232 test instruments over your standard LAN.

The Agilent E5810A can use DHCP, if available, to automatically configure necessary network parameters, including its IP address. The gateway can be controlled from multiple locations and by multiple users via your LAN, so it is easy to share the control of instruments from locations worldwide.

Remote access of GPIB and RS-232 instruments with the E5810A is easy. First, enter its IP address (as displayed on the gateway) into any Web browser to gain access to the connected instruments via E5810A. Then, use your Web browser to send instrument commands interactively and you are able to view your measurement results right away. You can use the digital display and LEDs to check the IP address and trouble-shoot locally.

You can access programming capability in all standard development environments with the latest version of IO Libraries Suite.

Features

- Remote access and control of GPIB and RS-232 instruments via LAN
- Easy set up and use via digital display and Web browser

Recommended use

- Connection to remote GPIB and RS-232 instrumentation
- LAN distributed systems

System use

- For system environments, the E5810A gateway can be rack-mounted. The rack mount kit (Option 100) allows two devices to be placed sideby-side in one rack width. For guidelines to select the appropriate instrument control hardware for a remote connection, see page 2.

Take advantage of LAN technology for your GPIB instruments and test systems

E5810A technical specifications

General requirements	
Minimum system requirements	Available 10BASE-T/100BASE-TX LAN port (client computers) Windows XP / Vista / 7 / 8
Supported Web browsers	Internet Explorer 6.0 or greater Internet Explorer 7.0 or higher is recommended for Windows Vista, Windows 7, Windows 8, Windows Server 2008 R2 and Windows Server 2012
Software requirements	Web browser Agilent IO Libraries Suite (included) Please see requirements on page 14
Supported standards	IEEE 488.1 and IEEE 488.2-compatible 10BASE-T/100BASE-TX networks VXI-11 protocol EIA-232

General characteristics	
Power supply	100–240 V±10%
Power consumption	(7 watts) 25 VA peak
Power line frequency	47 to 63 Hz
Connectors	Standard 24-pin IEEE-488 (GPIB), RS-232 (9-pin), LAN RJ-45
Maximum data rates	More than 900 KB/s—GPIB port 115 Kb/s—RS-232 port
RS-232 baud rate	300, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200 b/s
RS-232 flow control	None, RTS/CTS, XON/XOFF, DTR/DSR
RS-232 parity	None, Odd, Even, Space, Mark
RS-232 bits	5, 6, 7, 8
RS-232 stop bits	1, 2
RS-232 SRQ interrupts	on RI, DSR, DCD, CTS
Max instrument connections	14 instruments—daisy chain via GPIB 1 RS-232 device Up to 16 simultaneous I/O connections
Indicators	LEDs for Power, Activity and Fault
EMC and safety *	IEC 61326-1 Group 1, Class A IEC 61010-1
Warranty	1 year
Network protocols	See the E5810A User's Manual for supported network protocols and functions

Dimensions	
Length, width, and height	211 mm (W) x 230 mm (D) x 41 mm (H) (1U height, ½ rack)
Weight	1.6 kg

Environmental specifications	
Operating environment	0 °C to 55 °C
Operating humidity	Up to 90% at 40 °C non-condensing
Storage environment	–40 °C to +70 °C
Storage humidity	Up to 90% at 65 °C non-condensing
Recommended accessories	GPIB cables/adapter (refer to page 14) Rack mount kit (Option 100)

GPIB Cables and Adapter

Agilent connectivity software

Agilent connectivity software helps you establish a connection **in less than 15 minutes**.

Agilent IO Libraries Suite eliminates the hours of effort it takes to connect and configure PC-controlled test systems. This connectivity software ships with each Agilent instrument control hardware and over 150 Agilent test and measurement instruments. Connecting your instruments to a PC is as easy as connecting a PC to a printer — even if you use multiple instruments from different vendors.

Now the enhanced version 16.3 or higher is with expanded compatibility with other vendors' IO software. You can now use any programming API with any standard T&M software development environment. Simply install Agilent's IO libraries Suite on your PC, then cable the interfaces and instruments to your PC. The IO Libraries Connection Expert utility will find the interfaces and instruments connected to your computer and configure them properly.

System Requirements

Agilent IO Libraries version 16.3

PC software

Operating system
- Windows 8 32-bit and 64-bit (Windows 8, Windows 8 Pro and Windows 8 Enterprise)
- Windows 7 SP1 32.bit and 64-bit (Starter, Home Basic, Home Premium, Professional, Ultimate, Enterprise)
- Windows Vista SP1 and SP2 32-bit and 64-bit (Home, Home Premium, Business, Ultimate, Enterprise Editions)
- Windows XP Pro or Home edition SP3 or later, 32-bit only
- Windows Server 2012 64-bit (Standard)
- Windows Server 2008 R2 SP1, 64-bit (Standard and Enterprise)

PC hardware

- Processor: 600 MHz class (800 MHz or greater recommended)
- RAM: Windows XP: 256 MB minimum (1 GB or greater recommended)
- Windows Vista or 7: 1 GB minimum
- Hard disk space required: 1.5 GB
- Display: 1024 x768, 96 or 120 DPI

If you already own an Agilent I/O product or instrument, you can download the latest version of Agilent IO Libraries Suite at no cost.

For more information, visit:
www.agilent.com/find/iosuite

Cables

Agilent also offers a variety of cables that provide easy and reliable connections. Agilent cables are engineered for high reliability and durability, even under harsh conditions.

Cable	Length
10833D GPIB cable	0.5 m
10833A GPIB cable	1.0 m
10833B GPIB cable	2.0 m
10833C GPIB cable	4.0 m
10833F GPIB cable	6.0 m
10833G GPIB cable	8.0 m

Adapter

The 10834A GPIB-to-GPIB adapter can help when limited rear-panel space and other design considerations make cabling difficult. The 10834A adapter extends the first cable to 2.3 cm away from the rear panel to provide clearance for other connectors, switches, and cables.

Measurement Automation—Quick and Easy

Whatever instrument you're programming—whether a signal analyzer, oscilloscope, power supply or DMM—Agilent VEE graphical language software and instrument control hardware provide you the ease and flexibility to set up and automate the way you want for your application need. Make measurements quickly, easily and affordably today.

Related Literature

Pub number	Literature
5989-0123EN	Modern Connectivity–Using USB and LAN I/O Converters, application note 1475-1
5988-5897EN	Simplified PC Connections for GPIB Instruments, application note 1409-1
5989-1412EN	Using LAN in Test Systems: The Basics, application note 1465-9
5989-1413EN	Using LAN in Test Systems: Network Configuration, application note 1465-10
5989-1417EN	Using USB in the Test and Measurement Environment, application note 1465-12
5988-9818EN	Computer I/O Considerations, application note 1465-2
5989-3312EN	Create flexible test systems that easily incorporate USB, LAN, GPIB and RS-232C
5989-3312EN	Tips and Tricks for Using USB, LAN and GPIB
5989-1889EN	Agilent Connectivity Hardware for PC-to-Instrument Connectionsz